

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of claims:

1-19. (Canceled)

20. (New) A continuous process for the hydrogenation of compounds comprising nitrile or nitro functional groups to amine or aminonitrile compounds in the presence of a heterogeneous hydrogenation catalyst in divided form and of a basic compound said process comprising the steps of::

a) feeding, into a stirred reactor:

a first stream, of reactant to be hydrogenated,

a second stream, of catalyst,

a third stream, of basic compound, and

a fourth stream, of hydrogen in order to maintain the reactor

under a pressure of hydrogen;

b) withdrawing, from the reactor, at least a fifth stream consisting of the reaction mixture and including hydrogen bubbles dispersed in the said mixture;

c) making this fifth stream circulate in at least one loop, which runs into the bottom and the top of the reactor, and removing, by heat exchange with the said fifth stream, the heat produced by the hydrogenation reaction so as to maintain the reaction mixture at a temperature below 150°C;

d) withdrawing, from this fifth stream circulating in one of the loops, a sixth stream containing a portion of the hydrogenate separated from the catalyst;

- e) withdrawing, from the reactor or from one of the circulation loops, a seventh stream, of hydrogenate which is fed into a liquid/solid separation step, and
- f) recovering the liquid phase containing the catalyst-free hydrogenate and the solid phase formed by the catalyst, the said solid phase being treated in order to be regenerated before being recycled into the second catalyst stream.
21. (New) The process according to Claim 20, wherein the heat is removed by a heat exchanger placed downstream of the said withdrawal of the sixth stream of hydrogenated compounds in the circulation loop for the said fifth stream.
22. (New) The process according to Claim 20, just after step e), further comprising the step of:
- e') withdrawing an eighth stream of the reaction mixture from the reactor and said stream being circulated in a second loop before being recycled into the reactor, the heat being removed by a heat exchanger placed in the said circulation loop for said eighth stream.
23. (New) The process according to Claim 20, wherein the sixth stream is withdrawn through a filter medium.
24. (New) The process according to Claim 23, wherein the filter medium is a porous medium placed tangentially to the direction of the fifth stream circulating in the loop.
25. (New) The process according to Claim 24, wherein the porous medium is made of metal.
26. (New) The process according to Claim 24, wherein the filter medium comprises a membrane placed on a support.

27. (New) The process according to Claim 20, wherein the reaction mixture further includes a solvent.
28. (New) The process according to Claim 20, wherein the reaction mixture further includes water, ammonia or an alcohol.
29. (New) The process according to Claim 28, wherein the reaction mixture comprises from 1.5% to 7% by weight of water with respect to the liquid mass of the reaction mixture.
30. (New) The process according to Claim 20, wherein in step e), the liquid/solid separation carried out on the seventh stream is a settling, filtering or centrifuging step.
31. (New) The process according to Claim 30, wherein the liquid/solid separation is carried out in a device comprising an upper portion having a bottom in the form of a cone, and a pipe of small cross section extending from the end of the cone, a means for moving the solid being placed in the pipe of small cross section, the reaction mixture being fed into the said upper portion, the liquid phase separated from the solid being withdrawn from the said upper portion, and the settled solid being recovered from the bottom of the pipe of small cross section.
32. (New) The process according to Claim 31, wherein water is added into the pipe of small cross section.
33. (New) The process according to Claim 20, wherein the solid phase recovered in step f) is further subjected to a catalyst regeneration step g).
34. (New) The process according to Claim 33, wherein the regenerated catalyst obtained in step g) is fed into the second catalyst stream of step a).

35. (New) The process according to Claim 20, wherein the second catalyst stream of step a) consists of a mixture comprising the catalyst, a basic compound and optionally a solvent in which the basic compound is insoluble, with a basic compound/catalyst ratio being between 0.1 mol and 50 mol of basic compounds per 1 kg of catalyst.
36. (New) The process according to Claim 35, wherein the catalyst in the second catalyst stream is a mixture of fresh catalyst and regenerated catalyst.
37. (New) The process according to Claim 20, wherein the catalyst is a Raney nickel or a Raney cobalt comprising between 2% and 6% by weight of aluminium and optionally a dopant being chromium, titanium, molybdenum, copper, tungsten, iron, zinc, rhodium or iridium.
38. (New) The process according to Claim 20, wherein the polynitrile compound is adiponitrile.